WHAT IS CLAIMED IS:

1. A packet transmission system comprising:

at least one first host apparatus belonging to a first host group;

at least one second host apparatus belonging to a second host group; and

a router which transfers packets between said first at least one host apparatus and said second at least one host apparatus;

each of said at least one first host apparatus in said first host group comprises,

an insertion unit which inserts in a packet an IP address and a link-layer address of a destination host apparatus of the packet, where said destination host apparatus belongs to said second host group, and

a first transmission unit which transmits said packet in which said IP address and said link-layer address are inserted;

said router comprises,

a port determination unit which determines a port connected to said at least one second host apparatus in said second host group based on said IP address inserted in said packet transmitted by said first transmission unit, and

a second transmission unit which transmits said packet from said port determined by said

port determination unit.

2. A packet transmission system according to claim 1, wherein each of said at least one first host apparatus in said first host group further comprises a unit which determines whether or not said destination host apparatus belongs to a subnetwork at a first predetermined level in a network hierarchy, based on said IP address of the destination host apparatus and a first subnet mask.

3. A packet transmission system according to claim 1, wherein said router further comprises a unit which determines a subnet address of a subnetwork at a second predetermined level in a network hierarchy to which said destination host apparatus belongs, based on said IP address of the destination host apparatus and a second subnet mask.

4. A packet transmission system comprising:

a plurality of host apparatuses; and

at least one router which transfers packets between said plurality of host apparatuses;

each of said plurality of host apparatuses comprises,

a first storage unit which stores IP addresses of host apparatuses belonging to a first subnetwork at a first predetermined level in a network

hierarchy and link-layer addresses corresponding to the IP addresses,

a first determination unit which determines whether or not a destination host apparatus of a packet belongs to said first subnetwork,

a link-layer address acquisition unit which acquires from said first storage unit a link-layer address of said destination host apparatus based on an IP address of said destination host apparatus when said first determination unit determines that said destination host apparatus belongs to said first subnetwork,

an insertion unit which inserts in said packet said IP address of said destination host apparatus as a destination IP address and said link-layer address of said destination host apparatus as a destination link-layer address, and

a first transmission unit which transmits said packet in which said destination IP address and said destination link-layer address are inserted;

each of said at least one router comprises,

a plurality of ports each of which is connected to at least one host apparatus,

a second storage unit which stores a plurality of identifiers of said plurality of ports and a plurality of subnet addresses of a plurality of second subnetworks at a second predetermined level in a network hierarchy corresponding to the plurality of ports,

a reception unit which receives a packet transmitted from a source host,

a destination-IP-address extraction unit which extracts a destination IP address from said packet received by said reception unit,

a second determination unit which determines one of said plurality of subnet addresses of said plurality of second subnetworks to which said destination IP address extracted by said destination-IP-address extraction unit corresponds,

a third determination unit which determines one of said plurality of ports corresponding to said one of said plurality of subnet addresses determined by said second determination unit, by referring to said second storage unit, and

a second transmission unit which transmits said packet received by said reception unit, from said one of said plurality of ports determined by said third determination unit.

5. A packet transmission system according to claim 4, wherein said link-layer address is a MAC (Media Access Control) address.

6. A packet transmission system according to claim 4, wherein said first determination unit uses a first subnet mask in order to determine whether or not said destination

host apparatus of said packet belongs to said first subnetwork, said second determination unit uses a second subnet mask in order to determine one of said plurality of subnet addresses of said plurality of second subnetworks to which said destination IP address extracted by said destination-IP-address extraction unit corresponds, and the first and second subnet masks have different lengths.

7. A packet transmission system according to claim 4, wherein each of said at least one router comprises a discard unit which discards said packet received by said reception unit, as necessary.

8. A host apparatus for transmitting a packet to a destination host apparatus, comprising:

a storage unit which stores IP addresses of host apparatuses belonging to a subnetwork at a predetermined level in a network hierarchy and link-layer addresses corresponding to the IP addresses;

a determination unit which determines whether or not said destination host apparatus belongs to said subnetwork;

a link-layer address acquisition unit which acquires from said storage unit a link-layer address of said destination host apparatus based on an IP address of said destination host apparatus when said determination unit determines that said destination host apparatus

belongs to said subnetwork;

an insertion unit which inserts in said packet said IP address of said destination host apparatus as a destination IP address and said link-layer address of said destination host apparatus as a destination link-layer address; and

a transmission unit which transmits said packet in which said destination IP address and said destination link-layer address are inserted.

9. A computer-readable storage medium storing a program which makes a computer behave as a host apparatus comprising:

a storage unit which stores IP addresses of host apparatuses belonging to a subnetwork at a predetermined level in a network hierarchy and link-layer addresses corresponding to the IP addresses;

a determination unit which determines whether or not said destination host apparatus belongs to said subnetwork;

a link-layer address acquisition unit which acquires from said storage unit a link-layer address of said destination host apparatus based on an IP address of said destination host apparatus when said determination unit determines that said destination host apparatus belongs to said subnetwork;

an insertion unit which inserts in said packet

said IP address of said destination host apparatus as a destination IP address and said link-layer address of said destination host apparatus as a destination link-layer address; and

a transmission unit which transmits said packet in which said destination IP address and said destination link-layer address are inserted.

10. A router for transferring a packet between a plurality of host apparatuses, comprising:

a plurality of ports each of which is connected to at least one host apparatus;

a storage unit which stores a plurality of identifiers of said plurality of ports and a plurality of subnet addresses of a plurality of subnetworks at a predetermined level in a network hierarchy corresponding to the plurality of ports;

a reception unit which receives a packet transmitted from a source host;

a destination-IP-address extraction unit which extracts a destination IP address from said packet received by said reception unit;

a subnet-address determination unit which determines one of said plurality of subnet addresses of said plurality of subnetworks to which said destination IP address extracted by said destination-IP-address extraction unit corresponds;

a port determination unit which determines one of said plurality of ports corresponding to said one of said plurality of subnet addresses determined by said subnet-address determination unit, by referring to said storage unit; and

a transmission unit which transmits said packet received by said reception unit, from said one of said plurality of ports determined by said port determination unit.

11. A semiconductor device for use in a router having a plurality of ports each of which is connected to at least one host apparatus, and transferring a packet between host apparatuses, said semiconductor device, when used with said router, makes the router comprise:

a storage unit which stores a plurality of identifiers of said plurality of ports and a plurality of subnet addresses of a plurality of subnetworks at a predetermined level in a network hierarchy corresponding to the plurality of ports;

a reception unit which receives a packet transmitted from a source host;

a destination-IP-address extraction unit which extracts a destination IP address from said packet received by said reception unit;

a subnet-address determination unit which determines one of said plurality of subnet addresses of

said plurality of subnetworks to which said destination IP address extracted by said destination-IP-address extraction unit corresponds;

a port determination unit which determines one of said plurality of ports corresponding to said one of said plurality of subnet addresses determined by said subnet-address determination unit, by referring to said storage unit; and

a transmission unit which transmits said packet received by said reception unit, from said one of said plurality of ports determined by said port determination unit.